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BILATERAL TRANSECTION OF THE CHORDA TYMPANI AND LINGUAL NERVES INCREASED ANXIETY- AND DEPRESSION-LIKE BEHAVIORS IN RATS

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Sensory information plays an important role to determine psycho-emotional behaviors of individuals. In this study, we have examined psycho-emotional behaviors of rats after disrupting the oral sensory relay to brain with bilateral transection of the chorda tympani and lingual nerve (LNX). LNX rats are expected to lose their sensory information from the anterior two thirds of the tongue. Two weeks after the nerve transections or sham operations, rats were subjected to behavioral sessions to examine anxiety- and depression-like behaviors, and the brain monoamine levels were analyzed by high-performance liquid chromatography. Initial weight loss after the surgery was bigger in LNX rats and this effect remained during the whole experimental period, although daily food intake per 100 g body weight became greater in LNX rats. Ambulatory activity was decreased, anxiety-related behaviors during the activity test increased, time spent in the open arms during elevated plus maze test decreased, and immobility duration during Porsolt swim test increased in LNX rats compared with sham rats. LNX rats showed anhedonia with decreased sucrose consumption compared to sham rats. Serotonin levels in the hippocampus were decreased in LNX rats compared with sham rats. Results suggest that disruption of oral sensory relay to brain may lead to the development of depression- and anxiety-related disorders, and decreased serotonergic activity in the hippocampus play a role in its underlying mechanism.

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